



[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA-2017-0215; Special Conditions No. 25-669-SC]

Special Conditions: Textron Aviation Inc. Model 700 Airplane; Design Roll Maneuver Condition

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions; request for comments.

SUMMARY: These special conditions are issued for the Textron Aviation Inc. (Textron) Model 700 airplane. This airplane will have a novel or unusual design feature when compared to the state of technology envisioned in the airworthiness standards for transport-category airplanes. This design feature is an electronic flight-control system that provides control through pilot inputs to the flight computer. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: This action is effective on Textron on **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. We must receive your comments by **[INSERT DATE 45 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: Send comments identified by docket number FAA-2017-0215 using any of the following methods:

- *Federal eRegulations Portal:* Go to <http://www.regulations.gov/> and follow the online instructions for sending your comments electronically.
- *Mail:* Send comments to Docket Operations, M-30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, SE., Room W12-140, West Building Ground Floor, Washington, DC, 20590-0001.
- *Hand Delivery or Courier:* Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- *Fax:* Fax comments to Docket Operations at 202-493-2251.

Privacy: The FAA will post all comments it receives, without change, to <http://www.regulations.gov/>, including any personal information the commenter provides. Using the search function of the docket Web site, anyone can find and read the electronic form of all comments received into any FAA docket, including the name of the individual sending the comment (or signing the comment for an association, business, labor union, etc.). DOT's complete Privacy Act Statement can be found in the **Federal Register** published on April 11, 2000 (65 FR 19477-19478)

Docket: Background documents or comments received may be read at <http://www.regulations.gov/> at any time. Follow the online instructions for accessing the docket or go to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Greg Schneider, FAA, Airframe and Cabin Safety Branch, ANM-115, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98057-3356; telephone 425-227-2116; facsimile 425-227-1320.

SUPPLEMENTARY INFORMATION: The FAA has determined that notice of, and opportunity for prior public comment on, these special conditions is impracticable because these procedures would significantly delay issuance of the design approval and thus delivery of the affected airplane.

In addition, the substance of these special conditions has been subject to the public-comment process in several prior instances with no substantive comments received. The FAA therefore finds it unnecessary to delay the effective date and finds that good cause exists for making these special conditions effective upon publication in the **Federal Register**.

Comments Invited

We invite interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data.

We will consider all comments we receive by the closing date for comments. We may change these special conditions based on the comments we receive.

Background

On November 20, 2014, Textron applied for a type certificate for their new Model 700 airplane. The Model 700 airplane is low-wing, pressurized, turbofan-powered executive jet airplane with seating for two crewmembers and up to 12 passengers. This airplane will have two Honeywell AS907-2-1S turbofan engines and a maximum takeoff weight of 38,514 pounds.

Type Certification Basis

Under the provisions of Title 14, Code of Federal Regulations (14 CFR) 21.17, Textron must show that the Model 700 airplane meets the applicable provisions of part 25, as amended by Amendments 25-1 through 25-139, 25-141, and 25-143.

If the Administrator finds that the applicable airworthiness regulations (i.e., 14 CFR part 25) do not contain adequate or appropriate safety standards for the Textron Model 700 airplane because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same novel or unusual design feature, these special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, the Model 700 airplane must comply with the fuel-vent and exhaust-emission requirements of 14 CFR part 34, and the noise-certification requirements of 14 CFR part 36. The FAA must issue a finding of regulatory adequacy under § 611 of Public Law 92-574, the “Noise Control Act of 1972.”

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with § 11.38, and they become part of the type certification basis under § 21.17(a)(2).

Novel or Unusual Design Features

The Model 700 airplane will incorporate the following novel or unusual design feature:
An electronic flight-control system that provides control through pilot inputs to the flight computer.

Discussion

The roll control system uses both ailerons and flight spoilers. The aileron control system is a fully mechanical system, and the flight spoilers are fly-by-wire. Section 25.349 specifies roll maneuver load conditions that are based on aileron deflection, rather than control-wheel deflection. By specifying the load conditions in terms of aileron deflection, the current requirement does not address electronic flight controls that cause nonlinearities and other loads caused by spoilers. Since this type of system affects flight loads, and therefore the structural capability of the airplane, special conditions are necessary to address these effects.

These special conditions differ from current requirements in that they require the actuation of the cockpit roll control, as opposed to the aileron itself, to perform the roll maneuver. Also, these special conditions require an additional load condition at V_A , in which the cockpit roll control is returned to neutral following the initial roll input.

These special conditions differ from similar special conditions applied to previous similar technologies. These special conditions are limited to the roll axis only, whereas previous special conditions also included the pitch and yaw axes. Special conditions are no longer necessary for the pitch or yaw axes because Amendment 25-91 takes into account the effects of an electronic flight-control system in those axes (§ 25.331 for pitch and § 25.351 for yaw).

These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

Applicability

As discussed above, these special conditions are applicable to the Textron Model 700 airplane. Should Textron apply at a later date for a change to the type certificate to include

another model incorporating the same novel or unusual design feature, these special conditions would apply to that model as well.

Conclusion

This action affects only one novel or unusual design feature on one model of airplane. It is not a rule of general applicability.

The substance of these special conditions has been subjected to the notice and comment period in several prior instances and has been derived without substantive change from those previously issued. It is unlikely that prior public comment would result in a significant change from the substance contained herein. Therefore, because a delay would significantly affect the certification of the airplane, the FAA has determined that prior public notice and comment are unnecessary and impracticable, and good cause exists for adopting these special conditions upon publication in the **Federal Register**. The FAA is requesting comments to allow interested persons to submit views that may not have been submitted in response to the prior opportunities for comment described above.

List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

The Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for Textron Aviation Inc. Model 700 airplanes.

In lieu of compliance with § 25.349(a), the following conditions, speeds, and cockpit roll control motions (except as the motions may be limited by pilot effort) must be considered in combination with an airplane load factor of zero and of two-thirds of the positive maneuvering factor used in design. In determining the resulting control-surface deflections, the torsional flexibility of the wing must be considered in accordance with § 25.301(b):

1. Conditions corresponding to steady rolling velocities must be investigated. In addition, conditions corresponding to maximum angular acceleration must be investigated for airplanes with engines or other weight concentrations outboard of the fuselage. For the angular-acceleration conditions, zero rolling velocity may be assumed in the absence of a rational time history investigation of the maneuver.
2. At V_A , sudden movement of the cockpit roll control up to the limit is applied. The position of the cockpit roll control must be maintained until a steady roll rate is achieved, and then must be returned suddenly to the neutral position.
3. At V_C , the cockpit roll control must be moved suddenly and maintained so as to achieve a roll rate not less than that obtained in paragraph 2.
4. At V_D , the cockpit roll control must be moved suddenly and maintained so as to achieve a roll rate not less than one third of that obtained in paragraph 2.

Issued in Renton, Washington, on April 24, 2017.

Michael Kaszycki
Assistant Manager, Transport Airplane Directorate
Aircraft Certification Service
[FR Doc. 2017-09440 Filed: 5/9/2017 8:45 am; Publication Date: 5/10/2017]